

EVIDENCE FOR MESOZOIC METAMORPHIC EVENTS IN THE ACCRETIONARY COMPLEX OF S CHILE

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The coast ranges of southern Chile (34 to 52 S Lat.) are underlain by a metamorphic complex, until recently considered to represent a late Paleozoic accretionary complex. However, in the last two years, paleontological findings and the dating of metamorphic rocks by SHRIMP U/Pb, Ar-Ar and F-T methods, have produced evidence that high P/low T metamorphism south of 43°S occurred in the Mesozoic. In the Chonos archipelago region, fossils previously considered as Devonian, have been identified as Late Triassic Monotis. The same rocks have detrital zircon populations of Late Triassic age, as determined by SHRIMP U/Pb age determinations. The zircons have 140 Ma old fission track ages, which bracket the metamorphism to Jurassic times. At the Diego de Almagro island (51°S), mafic blueschists of oceanic derivation are tectonically interlayered with metavolcanic and granitic rocks which contain Late Jurassic igneous zircon crystals. Ar-Ar laser dating indicate Cretaceous cooling ages in white micas. The Jurassic magmatic rocks recrystallized at the same high P/low T conditions of the blueschists, indicating that continental crust was also subducted during this event. These results indicate that Jurassic to Early Cretaceous subduction was active on the South Pacific Gondwana margin of South America. There appears to be no evidence of deeply subducted Late Paleozoic rocks south of 43°S. The Late Paleozoic subduction detected in Central Chile (34-42°S) either did not operate further south, or the continental margin of South America has disappeared by tectonic erosion or lateral transport. The Antarctic Peninsula could have been located at the western margin of southern South America by Late Paleozoic - Early Mesozoic times and bear the evidence of the coeval subduction processes.